CASE REPORT

Surgical Treatment of Renal Cell Carcinoma in a Horseshoe-shaped Kidney Concomitant with an Aortic Aneurysm

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Introduction

The treatment of renal cell carcinoma (RCC incidence 2%) or an aortic aneurysm (AA incidence 4%) combined with a horseshoe kidney (HSK incidence 0.2%) has been previously described in the literature. The combination of the three abnormalities together has only recently been described for the first time.1

Case Report

A 63-year-old man was investigated because of malaise. On physical examination an AA was suspected. Ultrasound investigation of the abdomen showed a HSK with a parenchymatous isthmus and an AA 49 mm in diameter. In addition the CT scan demonstrated a solid tumour in the left side of the HSK with a diameter of 35 mm. Aortography demonstrated an infrarenal AA with an hour-glass shaped narrowing. On both sides the renal arteries originated above to the neck of the AA, leading to the upper part of the HSK. A smaller aberrant proximal artery originating from the narrow part of the aneurysm led to the right side of the HSK. From the right common iliac artery an aberrant distal artery went to the lower right isthmus section. There was no evidence of metastases.

Via a median laparotomy the left branches of a large renal vein, originating from the cranial side of the isthmus, the left renal artery and the left ureter were ligated. The left side of the HSK, bearing the lesion, was resected without opening the pyela. The AA was repaired by a bifurcation prosthesis. After completing the proximal anastomosis the proximal aberrant renal artery on the right side was sutured in the vascular graft using a patch plasty. After endarterectomy of the iliac bifurcation and the origin of the caudal aberrant renal artery both legs of the prosthesis was anastomosed end to end to the common iliac artery (Fig. 1). The resected part of the HSK contained a RCC with a diameter of 35 mm (Fig. 2). The two years follow up was uneventful with no evidence of recurrence.

Discussion

A HSK may be the result of teratogenic factors and these same factors may be responsible for the increased incidence of related congenital anomalies and also of neoplasms.2 In cases of HSK with a parenchymatous isthmus there is a higher incidence of carcinoid tumours than RCC, possibly caused by abnormal migration from the posterior nephrogenic area.3 Radical nephrectomy is the standard therapy for RCC. In cases of neoplasm in a HSK however there is a place for limited resection or “heminephrectomy” with special attention being paid to the abnormal arteries and pyela.4 Simultaneous nephrectomy for neoplasm and AA repair is an appropriate management strategy for selected patients.5 Repair of an AA accompanied by a HSK without a neoplasm has been published even in case of a ruptured or inflammatory aneurysm. Based

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Fig. 1. Postoperative aortography after the implantation of an infrarenal aortobiiliac prosthesis. A stump of the ligated left renal artery is present. The right renal artery is unchanged. The proximal aberrant renal artery which was re-anastomosed using a patch plasty is visible at the right side of the bifurcation of the graft. The distal aberrant renal artery is visible 2 cm proximal to the iliac bifurcation.

Fig. 2. Drawing of the postoperative situation after “heminephrectomy” of the HSK bearing the RCC. The AA was repaired by an aorticbiiliac prosthesis. The proximal aberrant renal artery on the right was re-anastomosed to the prosthesis as a patch plasty. At the site of the distal aberrant renal artery and the iliac bifurcation an endarterectomy was performed.

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References


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on preoperative arteriography and venography the reconstruction of aberrant vessels can be planned. Renal arteries with a diameter of 2 mm or wider should be preserved by reimplantation using a patch technique or by the use of autologous vein or allograft. Concomitant stenosis of renal arteries can be treated by local endarterectomy. In case of simultaneous occurrence of RCC, HSK and AA as in our patient one stage surgery is feasible. Though the retroperitoneal approach for repair of an AA together with a HSK is normally preferred, “heminephrectomy” via the transabdominal approach in this case facilitated the reconstruction of the aberrant renal vessels.